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CAPTAIN KOCH'S CROSSING OF GREENLAND*

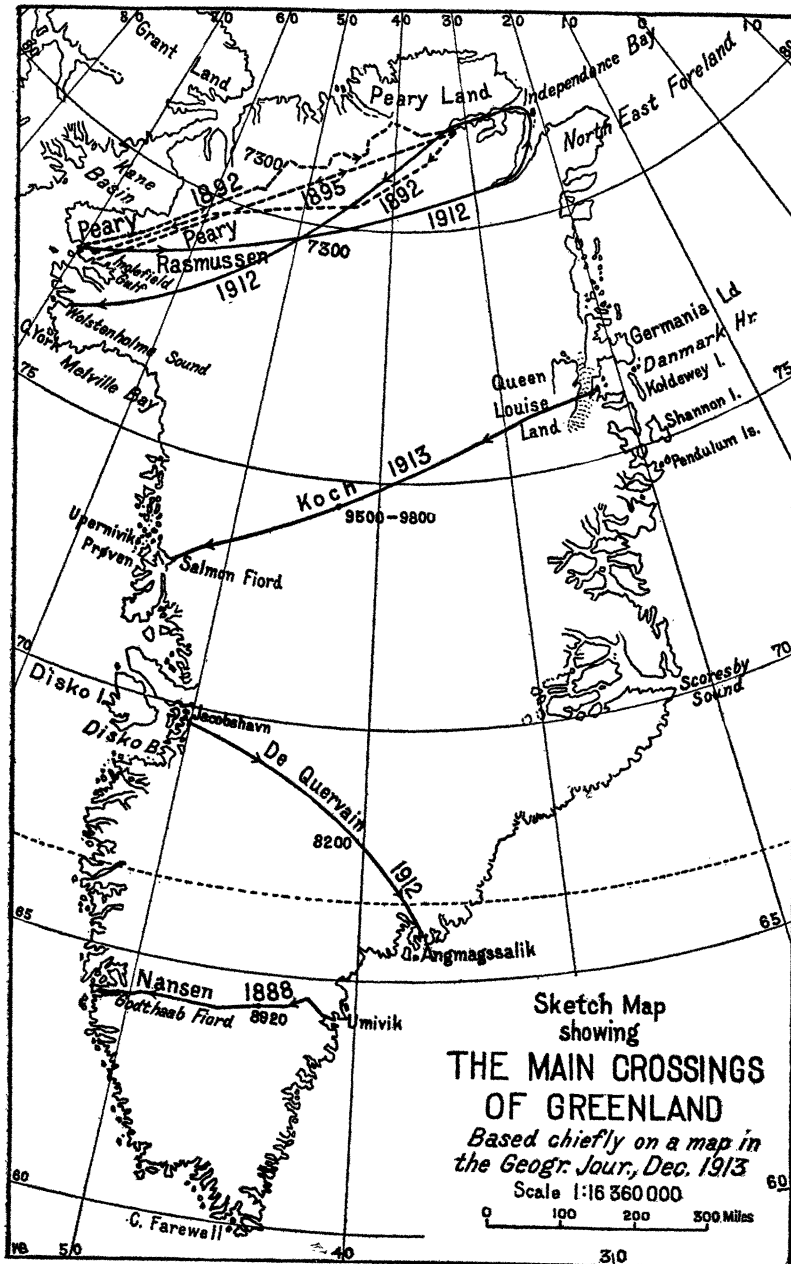
In July, 1912, the expedition consisting of Captain J. P. Koch of Copenhagen, the German Dr. Wegener, the Iclander Vigfus Sigurdsson, and the Dane Larsen, landed at Danmark Harbor on the east coast of Greenland. Thirteen of the sixteen small Iceland horses brought along by the expedition ran away immediately after landing, and Wegener and Vigfus rode off with the remaining horses to find them. They were lucky enough to capture ten. Captain Koch and Larsen were engaged in landing the twenty tons of supplies which the expedition carried. This work was done with the aid of a motor boat and was accomplished with great difficulty, the anchor being lost and the propeller broken during the operation.

Later, in August, the transit became more difficult, the ice closing in on the boat, holding her fast for twelve days, breaking the keel and rudder and eventually sinking the boat itself. Then ice formed and the expedition was obliged to wait three weeks before the ice was strong enough to bear the horses and large sledges. While reconnoitering the Brede Glacier, Dr. Wegener fell and broke a rib. After a few days, however, he was up again and able to participate in the work, and when, on October 13, the expedition settled down for the winter, he had quite recovered.

In order to reach Queen Louise Land, where the expedition intended to winter, it was necessary to build a bridge crossing five crevasses and to cut a passage in an ice wall 130 feet high. On the night of Sept. 30, however, the glacier "calved" and a block of ice a third of a mile wide fell into the fiord on both sides of the spot where the expedition had camped with its horses and supplies. The result was that half of the supplies were destroyed and the newly built bridges were carried away and the driveway was rendered impassable. The men and horses, however, were not injured and, when the ice had finished its movement, the supplies were recovered. It was nevertheless necessary to rebuild the bridges and driveway before the expedition could think of going forward.

In attempting to reach Queen Louise Land, four of the seven

* The Society is indebted to the Hon. Maurice F. Egan, American Minister at Copenhagen, for this summary of a translation of Captain Koch's report of his crossing of the inland ice of Greenland at its widest part from Denmark Harbor on the East Coast to Prøven on the West Coast.



N.B.—The maximum altitudes of the ice cap along the routes are indicated in feet.

sledges were seriously damaged and Captain Koch finally gave up the attempt and established winter quarters at a place called "Storstrømming," nine miles east of the center of Queen Louise Land. It was necessary to erect the house on the inland ice itself. All the horses except five were killed and their meat was used for the purpose of sustaining the remainder. From this time until the end of October, the expedition endeavored in vain to discover a better way to Queen Louise Land.

Captain Koch then had the ill-fortune to experience a second mishap, which he describes as follows: "We had the intention of making a new attempt in November, when the first full moon came, but before that time I fell off an ice wall about fifty feet high and broke my right leg. For three months I was confined to my bed and we could not proceed until March."

The winter was passed quietly. The temperature was -58° Fahr., but did no harm; and, on March 5, 1913, the expedition set out on horseback for Queen Louise Land, covering twenty-five miles in ten hours—the temperature being -40° Fahr. Then at last a sledge road was found that was passable. From March 4 to April 14 the expedition explored Queen Louise Land with the aid of sledges. Then Larsen fell from a snow bridge while crossing a river bed and injured his foot. However, he was almost well again when the expedition, on April 20, left its winter quarters on the long journey, 700 miles or more, across Greenland to the west coast. Captain Koch reports that at that time all the other members of the party were well and in good condition for the march.

Travel over the inland ice was extremely difficult. During the first forty days the party had only two days of fine weather and were obliged to stop for twelve days on account of blizzards. It was often necessary to travel against a wind of high velocity. The horses became exhausted and snow-blind and three of the five had to be killed. The men themselves stood the journey very well, notwithstanding the strong wind and the low temperature. In spite of daily frostbites no permanent injury resulted.

In central Greenland the expedition reached an elevation of 8,200 to 9,850 feet above the sea. The low atmospheric pressure in this region told upon the men and the horses, causing frequent exhaustion. The reflection of the snow was more troublesome, however, than anything else. Everyone suffered from skin peeling from the face and, as the temperature during June frequently went down to -22° and -29.20° Fahr., large wounds appeared on the men's faces. Arctic cramps were often very troublesome.

As the snow was very uneven, the sledges were frequently upset. Later, the snow became so loose that the horses had to be provided with snow shoes. In spite of this precaution they became very much exhausted owing to the poor food. On June 11, one of the two remaining ones had to be killed. At this time the party, having arrived at a place where the land sloped to the west, joined in hauling with the horse in the hope of retaining this last animal, which seemed indefatigable and to which all the members of the party were very much attached. The daylight marches increased in length.

On July 2, they sighted ice-free land, the first they had seen since May 16. But now the temperature rose very suddenly and the expedition emerged directly from the winter of the inland ice to the summer of the coast. At the same time new difficulties arose, the melting snow creating innumerable small lakes connected by deep streams, which rendered impassable for horses the way to the depot, which had been planted for the expedition in 1911. "Therefore," says Koch, "we were obliged to kill our last horse, our good friend in need, after it had traveled with us nearly 700 miles across Greenland, and was then only seven miles from green pastures."

As it was impossible to cross the Salmon [Lakse] Fiord without some special appliances, the expedition constructed from sledges and the covers of their bedding a ferry, which it became necessary to carry a distance of twelve miles to the Salmon Fiord. In carrying out this work the members of the party took with them provisions for five days, but no tents, sleeping bags, or anything else with which to protect themselves.

On July 11, they crossed the Salmon Fiord and proceeded toward Prøven. On the 13th they reached the peninsula Kangek, about twenty miles from Prøven, and were detained by rain, fog and snow. They built a cover after the Eskimo fashion, of rocks and moss and lay there for thirty-five hours without food, their last provisions having been exhausted. The weather cleared on the 16th, and the party desired to proceed, but were prevented by exhaustion brought on by hunger, cold and exposure. A difficult piece of territory covered with deep snow lay in their path and prevented further progress. They thereupon killed their dog that had traveled with them across the inland ice, cooked the meat and were about to eat it, when they discovered a sailing vessel in the fiord off Prøven. They signaled the boat by means of firing and were fortunately heard by those on board. The boat, which be-

longed to the Rev. Mr. Chemnitz of Upernivik, thereupon put in and took the party aboard.

The latter part of Captain Koch's report tells of the scientific results of the expedition. The chart of the district west of Danmark Harbor was completed and a rather extended knowledge of the interior of the country, its topography, vegetation and animal life was acquired. The most important parts of Queen Louise Land were surveyed and records of temperature were obtained, with the result that new light has been thrown upon certain natural phenomena heretofore unexplained.

The manner of movement and interior structure of the glaciers were examined and determined by means of many photographs. A large number of meteorological observations were made, which will serve as the foundation for further study. Fata Morganas were for the first time photographed by means of a special telescopic camera. The aurora borealis was photographed with a cinematographic objective after the method of Professor Stoermer. A special study was made of the polarization of the atmosphere and, during the passage across the inland ice, the light or reflecting capacity of the snow was measured. The rainbow was studied at temperatures as low as -30° Fahr. Observations of this sort have never been made before at a temperature lower than -7.6° Fahr. The results prove that the arctic mists consist of under-cooled water and not of ice crystals. In addition, a series of photographs and of stereoscopic micro-photographs of the rime-crystals were taken.

Captain Koch says that, while the scientific work was concentrated on a comparatively few matters, the observations on these were very thorough. He also mentions the fact that he found traces of snow sparrows and of polar foxes in the center of Greenland, at more than 300 miles from the nearest exposed land.